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temples and tombs. The models are votive offerings (donaria) which used to be presented to the shrine of some deity by the common people, and their medical significance is Dr. Sambon's own discovery. Looking one day at the collection of these objects in the museum at Rome, he noticed that they were intended to represent portions of the human body, certain internal organs, and so forth, a fact which had completely escaped the eye of the lay antiquarian, who took them to represent fruits. This discovery aroused Dr. Sambon's interest, and he began to collect specimens from various places in Italy. He has now got together several hundreds, chiefly from the Temple of Maternity at Capua, the Temple of Minerva Medica in Rome, and from the Etruscan towns of Corneto, Civita Lavinia and Veii. These terra cotta figures were in some cases thankofferings, in others appeals for children, for relief from some disease or deformity, and so on. The model represents the part of the body affected—the face or part of the face, the ear, a limb, or some internal organ—and, though rough, they are fashioned with a considerable knowledge of anatomy.—*London Times*.

CORRESPONDENCE.

CONSCIOUSNESS AND EVOLUTION.

PROFESSOR BALDWIN'S article on 'Consciousness and Evolution' in the last number of this journal should be carefully read and considered. No student of evolution can ignore consciousness and its place in organic development, but clear ideas can only be obtained by serious psychological study. Thus Darwin in discussing 'sexual selection' continually passes from those secondary sexual characters which are useful to the male in conquering other males or in finding and securing the female, to those characters which are supposed to please or charm the female. He does not realize the great difference in the two problems. The former is simply a special case of 'natural selection.' The latter introduces entirely new factors. The taste in

the female which prefers certain colors in the male is no less complex than the colors preferred. So long as it is not possible to assign any useful function to the female taste, nothing whatever is gained by assuming it to be the cause of the preservation of otherwise harmful characters in the male.*

Now as I understand Darwin in this instance and Professor Cope in those of his writings that I have read, consciousness *qua* consciousness, in interaction with the physical world, is used to explain the preservation (Darwin) and even the origin (Cope) of variations. Thus Mr. Cope remarks (SCIENCE N. S., Vol. II., p. 125):

"The cause of the movements of organic beings are various. The best known are conscious states, as hunger, cold, heat and various other sensations; some of them of higher mental grade, as fear, anger, etc. Movements by the lowest animals, as that drop of jelly, the amoeba, appear to be the result of sensations. * * * * The phenomenon of heliotropism, for instance, when these simple creatures leave the dark and crowd into light places, cannot be shown to be due to chemical or physical causes only. They seek oxygen, which is more abundant where sunlight penetrates, but they have to be aware that they need it, and must have some knowledge of the fact when they get it."

Probably most psychologists would say that the causes of the movements of organic beings are physical stimuli acting on a complex physical organism. If we can never explain the movements of protozoa toward the light by chemical or physical causes, then it must be by some form of energy analogous to these. When Mr. Baldwin writes, "I agree with Mr. Cope that most race habits are due to conscious function in the first place," he probably means that the habits are due to the cerebral concomitants of consciousness, but I understand that Mr. Cope would assume consciousness in causal interaction with the physical world.

Mr. Baldwin does well to call attention to the relation of the social environment to human ev-

* I should myself take it for granted that the female likes certain traits because they are present in the male, not that the traits are present in the male because the female likes them. I venture to suggest that the bright colors and useless appendages in the male develop an accompanying alertness that more than counterbalances their drawbacks.

olution. The survival of the fittest, in the case of man, is as much a survival of fit ideas, institutions, etc., as of individuals. In man individual plasticity is required rather than inherited special traits. A realization of this would make a book such as Mr. Kidd's *Social Evolution* impossible. Mr. Kidd's major premise is that evolution takes place exclusively through severe natural selection, but, as a matter of fact, human progress also occurs through coöperative improvement in the social environment.

Professor Le Conte has contributed a very interesting address to the July number of *The Monist* in which he distinguishes social progress from organic development. He, however, regards the Lamarckian factors as essential to human progress, and does not, I think, adequately value the progress that can be made through improving the environment without regard to any organic change in the individual. Indeed I shall follow the advice of Mr. Le Conte in a recent number (Vol. I., page 188) of this journal and venture to point out what seems to me a fallacy in his argument. Mr. Le Conte writes: "Now I cannot at all accept this view [that Lamarckian factors are no factors in evolution]; I will not stop to argue it, but simply point out some logical consequences when applied to human progress; consequences which, it seems to me, are nothing less than a *reductio ad absurdum* for the view;" and he proceeds to describe the consequences, "the pitiless destruction of the weak, the sick and the helpless," against which "we instinctively revolt." But even if these practical consequences follow, one is surely not justified in arguing that facts do not exist because we would gladly have them otherwise.

J. McKEEN CATTELL.

SCIENTIFIC LITERATURE.

A Text-book of Zoögeography. By FRANK E. BEDDARD. Cambridge, 1895. (Cambridge Natural Science Manuals—biological series.)

Zoögeography treats of the geographical distribution of all animals, and in 'A Text-book of Zoögeography,' Mr. Beddard himself says: "The science is not limited to a consideration of the animals which inhabit dry land; but," he immediately adds, "this volume will only deal with *those forms*, touching incidentally upon

some of the fresh water species, whose distribution is apparently governed by the same laws as those which govern the distribution of the purely terrestrial animals" (p. 4). Inasmuch as the distribution of marine animals is determined by other factors than the distribution of terrestrial and fresh-water forms, we have some reason to complain of the too comprehensive scope of the title, but, with this caveat, we can judge the work in question on its own merits as an epitome of the geographical distribution of mammals and birds with some references to other animals.

The time-honored Sclaterian 'regions' are retained, although modified by their own author long ago (1876). The subject-matter has been repeatedly discussed and need not detain us here. The reasons (often traversed) which have influenced Mr. Beddard are given by him at length (pp. 85-87). It is not untimely, however, to repeat that there is an entire want of congruity between the inland and marine faunal realms, and it may be added that while there is every gradation between marine and fresh-water types, the great bulk of fresh-water fishes, at least, has long been segregated completely from salt-water types, the Ostariophysii, including the hosts of Characinids, Cyprinids, Gymnotids, Silurids and their numerous allies, having only a few descendants that have reverted to the salt waters. This great assemblage, by the way, furnishes an excellent illustration of the truth of Mr. Beddard's assertion that "the facts of distribution are constantly liable to be misunderstood through ignorance of classification," and that "a knowledge of comparative anatomy is absolutely essential to the student of distribution" (25). The several families of Ostariophysii are widely separated in European works on ichthyology and associated with forms with which they have no affinity. Such knowledge, too, would have prevented the coupling of the *Galaxiidae* and *Haplochrominidae* as 'two families of Salmonoid fishes' (171), for they really have no relationship to the Salmonoids, but represent a group confined to the fresh waters of the southern hemisphere. Another misapprehension as to relationships on account of superficial similarity disguising anatomical differences is responsible for the statement that "the chief feature of the island [Madagascar] is the pres-